

IN THE CLAIMS:

Please amend the claims as indicated below:

1. (Currently Amended) A computer-implemented method comprising the steps of:

5 creating a document stack from at least one word in a handwritten document;

creating a query stack from a query; and

determining a measure between the document stack and the query stack,
where each query stack and document stack comprises a plurality of scores, wherein the measure is a dot product measure defined as follows

$$\cos(\vec{q}, \vec{d}) = \frac{\vec{q} \cdot \vec{d}}{\sqrt{(\vec{q} \cdot \vec{q})(\vec{d} \cdot \vec{d})}}, \text{ where } \vec{q} \text{ is a vector comprising scores from the query stack, and wherein } \vec{d} \text{ is a vector comprising scores from the document stack.}$$

2.-9. (Cancelled)

15 10. (Currently Amended) A computer-implemented method comprising the steps of:

creating a document stack from at least one word in a handwritten document;

creating a query stack from a query; and

20 determining a measure between the document stack and the query stack, The method of claim 1, wherein each stack is not constrained to words in a vocabulary, wherein each of the words in a query stack or document stack are comprised of a number of n-grams, wherein probabilities are determined for each n-gram of the query stack and document stack, and wherein the probabilities of the n-grams are used in the measure.

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11.-15. (Cancelled)

16. (Currently Amended) A computer-implemented method for retrieving a subset of handwritten documents from a set of handwritten documents, each of the handwritten documents having a plurality of document stacks associated therewith, the method comprising the steps of:

5 a) creating at least one query stack from a query comprising one or more words, wherein each word is handwritten or typed;

b) selecting a handwritten document from the set of handwritten documents;

c) selecting a document stack from the selected handwritten 10 document;

d) determining a measure between the at least one query stack and the selected document stack;

e) performing steps (c) and (d) for at least one document stack associated with the selected handwritten document;

f) performing steps (b), (c), and (d) for each handwritten document of the set of handwritten documents;

g) scoring each of the handwritten documents in the set of handwritten documents by using the query and the measures, thereby creating a number of document scores; and

20 h) selecting the subset of handwritten documents for display by using the document scores, wherein each stack is not constrained to words in a vocabulary, wherein each of the words in a query stack or document stack are comprised of a number of n-grams, wherein probabilities are determined for each n-gram of the query stack and document stack, and wherein the probabilities of the n-grams are used in the measure.

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17.-25. (Cancelled)

26. (Currently Amended) A computer-implemented method comprising the steps of:

30 creating a first word recognition stack, by using a first handwriting recognizer, from at least one word;

creating a second word recognition stack, by using a second handwriting recognizer, from the at least one word; and

comparing the first and second word recognition stacks with a third word recognition stack to determine whether a handwritten document should be retrieved;

5 configuring a handwriting recognizer into a first configuration to create the first handwriting recognizer; and

configuring the handwriting recognizer into a second configuration to create the second handwriting recognizer, wherein the first and second configuration are different, wherein the first configuration comprises a configuration caused by selecting a constraint from the group consisting essentially of an uppercase letter constraint, a lowercase letter constraint, a recognize digits constraint, a language constraint, a constraint wherein characters and words are recognized only if in a vocabulary, and a constraint wherein characters and words are hypothesized when not in a vocabulary, and wherein the second configuration comprises a configuration caused by selecting a constraint from the group consisting essentially of an uppercase letter constraint, a lowercase letter constraint, a recognize digits constraint, a language constraint, a constraint wherein characters and words are recognized only if in a vocabulary, and a constraint wherein characters and words are hypothesized when not in a vocabulary.

20 27.-33. (Cancelled)

34. (Currently Amended) A computer system comprising:
 a memory that stores computer-readable code; and
 a processor operatively coupled to the memory, the processor configured
25 to implement the computer-readable code, the computer-readable code configured to:
 create a document stack from at least one word in a handwritten
document;
 create a query stack from a query; and
 determine a measure between the document stack and the query stack,
30 where each query stack and document stack comprises a plurality of scores, wherein the measure is a dot product measure defined as follows

$$\cos(\vec{q}, \vec{d}) = \frac{\vec{q} \cdot \vec{d}}{\sqrt{(\vec{q} \cdot \vec{q})(\vec{d} \cdot \vec{d})}}$$
, where \vec{q} is a vector comprising scores from the query stack, and wherein \vec{d} is a vector comprising scores from the document stack.

35. (Currently Amended) A computer system comprising:

5 a memory that stores computer-readable code; and

a processor operatively coupled to the memory, the processor configured to implement the computer-readable code, the computer-readable code configured to:

create a first word recognition stack, by using a first handwriting recognizer, from at least one word;

10 create a second word recognition stack, by using a second handwriting recognizer, from the at least one word; and

compare the first and second word recognition stacks with a third word recognition stack to determine whether a handwritten document should be retrieved;

15 configure a handwriting recognizer into a first configuration to create the first handwriting recognizer; and

configure the handwriting recognizer into a second configuration to create the second handwriting recognizer, wherein the first and second configuration are different, wherein the first configuration comprises a configuration caused by selecting a constraint from the group consisting essentially of an uppercase letter constraint, a lowercase letter constraint, a recognize digits constraint, a language constraint, a constraint wherein characters and words are recognized only if in a vocabulary, and a constraint wherein characters and words are hypothesized when not in a vocabulary, and wherein the second configuration comprises a configuration caused by selecting a constraint from the group consisting essentially of an uppercase letter constraint, a lowercase letter constraint, a recognize digits constraint, a language constraint, a constraint wherein characters and words are recognized only if in a vocabulary, and a constraint wherein characters and words are hypothesized when not in a vocabulary.

36. (Currently Amended) An article of manufacture comprising:
a computer readable medium having computer-readable code means
embodied thereon, the computer-readable program code means comprising:
a step to create a document stack from at least one word in a handwritten
5 document;
a step to create a query stack from a query; and
a step to determine a measure between the document stack and the query
stack, where each query stack and document stack comprises a plurality of scores,
wherein the measure is a dot product measure defined as follows

$$\cos(\vec{q}, \vec{d}) = \frac{\vec{q} \cdot \vec{d}}{\sqrt{(\vec{q} \cdot \vec{q})(\vec{d} \cdot \vec{d})}}, \text{ where } \vec{q} \text{ is a vector comprising scores from the}$$

10 query stack, and wherein \vec{d} is a vector comprising scores from the document stack.

37. (Currently Amended) An article of manufacture comprising:
a computer readable medium having computer-readable code means
embodied thereon, the computer-readable program code means comprising:
a step to create a first word recognition stack, by using a first handwriting
recognizer, from at least one word;
a step to create a second word recognition stack, by using a second
handwriting recognizer, from the at least one word; and
20 a step to compare the first and second word recognition stacks with a third
word recognition stack to determine whether a handwritten document should be
retrieved;
a step to configure a handwriting recognizer into a first configuration to
create the first handwriting recognizer; and
25 a step to configure the handwriting recognizer into a second configuration
to create the second handwriting recognizer, wherein the first and second configuration
are different, wherein the first configuration comprises a configuration caused by
selecting a constraint from the group consisting essentially of an uppercase letter
constraint, a lowercase letter constraint, a recognize digits constraint, a language

constraint, a constraint wherein characters and words are recognized only if in a vocabulary, and a constraint wherein characters and words are hypothesized when not in a vocabulary, and wherein the second configuration comprises a configuration caused by selecting a constraint from the group consisting essentially of an uppercase letter constraint, a lowercase letter constraint, a recognize digits constraint, a language constraint, a constraint wherein characters and words are recognized only if in a vocabulary, and a constraint wherein characters and words are hypothesized when not in a vocabulary.

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